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(54) **OPTIMISED METHOD AND DEVICE LOOP COMBUSTION ON LIQUID HYDROCARBON FEEDSTOCK**

(75) Inventors: **Thierry Gauthier**, Brignais (FR); **Ali Hoteit**, Lyons (FR); **Ann Forret**, Longes (FR)

(73) Assignees: **IFP ENERGIES NOUVELLES**, Rueil-Malmaison (FR); **TOTAL SA**, Courbevoie (FR)

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Primary Examiner — Avinash Savani
Assistant Examiner — George R Blum
(74) *Attorney, Agent, or Firm* — Fitch, Even, Tabin & Flannery, LLP

(57) **ABSTRACT**

The invention relates to a device and to an improved method for chemical looping combustion of at least one liquid hydrocarbon feed, comprising: mixing the liquid feed with an atomization gas so as to feed it into a metal oxide particle transport zone (**2**), upstream from combustion zone (**3**), through atomization means (**6**) allowing to form finely dispersed liquid droplets in the atomization gas; vaporization of the liquid feed in form of droplets into contact with at least part of metal oxide particles in transport zone (**2**), the operating conditions in transport zone (**2**) being so selected that the superficial gas velocity after vaporization of the liquid feed is higher than the transport velocity of the metal oxide particles; sending all of the effluents from transport
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